## WHAT IS CLAIMED IS:

1. Method of information collection and processing of sample's surface, including successive reading of at least a portion of force curve, in predetermined points of surface under control within the process of approach and/or move apart (which goes after reverse) of sample and probe, which is set up at cantilever, and determination (according to it) of sample's parameters with further construction of appropriate space distributions, which differs by, that choice of points of control is carried out and values of cantilever's deviation force are noted within reading of at least a portion of force curve, as well as: and/or coordinates of its fixed end are; and/or derivatives from cantilever's deviation force of coordinate of its fixed end are at least in points of control of force curve, upon that, parameters of sample, characterizing relief and/or properties of sample's surface and/or a number and properties of its surface layers are determined by a number of points of control, and/or noted values of cantilever's deviation force, and/or coordinates of its fixed end, and/or derivatives from cantilever's deviation force of coordinate of its fixed end in appropriate points of control.

2. Method, as set forth in claim 1, differing by, that coordinates of sample's surface and/or of limits of their surface layers, or thickness of surface layers, or adhesion force of sample's surface and/or surface layers, or elasticity coefficient of sample's surface and/or surface layers, or frictional force of sample's surface and/or surface layers are used in the character of parameters, characterizing relief and/or properties of sample's surface and/or a number and properties of its surface layers.

3. Method, as set forth in claims 1 and 2, differing by, that a set of arguments are formed by values of cantilever's deviation force and/or coordinate of its fixed end and/or derivatives from cantilever's deviation force of coordinate of its

fixed end at least in points of control; determination of parameters is carried out by the way of forming of a set of functions, using received arguments and determination of their values.

4. Method, as set forth in claims 1-3, differing by, that points, limiting quasi-rectilinear portions of force curve, and/or points, where force curve shifts slope jumpy, are chosen as points of control.

5. Method, as set forth in claims 1-3, differing by, that points, where coordinate of fixed end of cantilever and/or force of its deviation and/or its first or second derivatives according to coordinate of fixed cantilever's end, achieve threshold values, received, e.g., using results of previous scanning or measurement are chosen as points of control.

6. Method, as set forth in claims 1-5, differing by, that construction of space distributions is carried out concerning coordinate of sample's surface.

7. Method, as set forth in claim 1, differing by, that choosing of points of control and/or noting of values of cantilever's deviation force, and/or coordinates of its fixed end, and/or derivatives from cantilever's deviation force of coordinate of its fixed end, are carried out after filtration of a set of current values of cantilever's deviation force and coordinates of its fixed end.

8. Method, as set forth in claims 1-3, differing by, that determination of parameters, using noted values of cantilever's deviation force and/or coordinates of its fixed end and/or derivatives from cantilever's deviation force of coordinate of its fixed end in a predetermined subset of points of control is carried out, taking into consideration values of indicated magnitudes in other subsets of points of control.

9. Method, as set forth in claim 1, differing by, that determination of parameters is carried out according to noted values of cantilever's deviation force and/or coordinate of its fixed end and/or derivatives from cantilever's deviation force according to coordinate of its fixed end in points of control, placed before and after or after and before absolute maximum of cantilever's deviation force within the process of approach and sample's move apart accordingly.

10. Method, as set forth in claim 2, differing by, that a number of surface layers of sample is determined as a number of points of control, limiting quasi-rectilinear portions of force curve; and/or as a number of points, where force curve shifts slope jumpy without unit and reverse point within the process of approach and move apart of sample and probe, if it is included into a number of points of control.

11. Method, as set forth in claim 10, differing by, that initial points of quasi-vertical portions are not taken into account upon determination of a number of surface layers of sample.

12. Method, as set forth in claim 2, differing by, that coordinate of sample's surface is determined by relationship:

$Ro = Zo - So$

where Ro is coordinate of sample's surface,

Zo, So is coordinate of fixed cantilever's end and magnitude of deviation of its free end at the moment of achievement (by cantilever's deviation force) of a value, equal to 0 or $-A$ within approach of sample and probe, and 0 or $+A$ within move apart of sample and probe, accordingly,

A is positive constant magnitude.

13. Method, as set forth in claim 2, differing by, that coordinate of sample's surface is diagnosed upon fulfillment of the term Zt – St = constant,
where Zt and St are current values of coordinate of fixed cantilever's end and of magnitude of deviation of its free end accordingly.

14. Method, as set forth in claim 2, differing by, that coordinates of limits of surface layers of sample are determined as coordinates of fixed cantilever's end in points of control, not including initial points of quasi-vertical portions within approach of sample and probe and final points of quasi-vertical portions within move apart of sample and probe.

15. Method, as set forth in claim 2, differing by, that coordinates of limits of surface layers of sample and their thicknesses are determined according to relationship like:
Ri = Zi – Si, Di = [R (i + 1) – Ri], where Ri and Di are coordinate of limit of i-layer and its thickness accordingly, i = (0, 1, 2...),
Zi, Si are coordinate of cantilever's fixed end and magnitude of deviation of its free end in an appropriate point of control, not including initial points of quasi-vertical points within approach of sample and probe, and final points of quasi-vertical portions within move apart of probe and sample.

16. Method, as set forth in claim 2, differing by, that coordinates of limits of surface layers of sample relatively sample's surface and their thicknesses are determined according to relationships like:
R'i = Zi – Si – Ro, Di = [R' (i+1) – R'i], where R'i and Di is coordinate of limit of i-layer, concerning sample's surface and its thickness accordingly, i = (0, 1, 2...),
Zi, Si are coordinate of cantilever's fixed end and magnitude of deviation of its free end accordingly in an appropriate point of control, not including initial

points of quasi-vertical portions within approach of sample and probe and final points of quasi-vertical portions within move apart of sample and probe.

17. Method, as set forth in claims 14-16, differing by, that coordinates of limits of surface layers of sample (measured within approach or move apart), are determined relatively coordinate of surface, which is measured also within move apart or approach accordingly.

18. Method, as set forth in claim 2, differing by, that adhesion force of surface layers of sample is determined by values of cantilever's deviation force in points of control, not including final points of quasi-vertical portions within move apart of sample and probe.

19. Method, as set forth in claim 2, differing by, that summary adhesion force of surface and surface layers of sample is determined as an absolute maximum of cantilever's deviation force within the process of move apart of probe and sample.

20. Method, as set forth in claim 2, differing by, that coordinate of sample's surface is determined with a correction for summary adhesion force, which takes place between probe and surface, according to relationship:

$Roa = Ro + Fac/Kp$, where Roa is coordinate of sample's surface with a correction taking into account summary adhesion force, which takes place between probe and surface,

Fac is summary adhesion force of sample's surface,

$Kp = Kk*tg\alpha/(1 - tg\alpha)$,

Kk is coefficient of cantilever's elasticity for bending,

$tg\alpha$ is slope of force curve in the vicinity of point Zo.

21. Method, as set forth in claim 2, differing by, that coordinate of sample's surface is determined with a correction taking into account elastic properties of surface, according to relationship:

Roy = Ro + So(Kk/Kp) upon Ro = Zo – So,

Roy = Zt – St + St(Kk/Kp) upon Zt – St = constant,

where Roy is surface coordinate.

22. Method, as set forth in claim 2, differing by, that coefficient of elasticity of surface layers of sample is determined according to relationship:

$Ki = B*Kk* tg\alpha i/(1 - tg\alpha i)$,

where Ki is coefficient of elasticity of i-layer;

$tg\alpha i$ is slope of a portion of force curve, placed between appropriate points of control, B is coefficient of proportionality.

23. Method, as set forth in claim 2, differing by, that coefficient of elasticity of sample's surface is determined according to relationship:

$Kp = Kk*tg\alpha/(1 - tg\alpha)$,

where Kp is coefficient of elasticity of sample's surface.

24. Method, as set forth in claim 2, differing by, that approach and/or move apart of sample and probe are carried out before achievement of threshold value by cantilever's deviation force.

25. Method, as set forth in claim 1, differing by, that reading of force curve is carried out more than one time in predetermined points of sample's surface under control.

26. Method, as set forth in claim 1, differing by, that reading of force curve in predetermined points of sample's surface under control is carried out within approach and move apart of sample and probe; and magnitude of residual deformation is determined using difference of received values of parameters.

27. Method, as set forth in claim 1, differing by, that modulated electric potential is applied to probe within the process of force curve's reading, and magnitude of force of electric_interaction of probe and surface and/or surface's layers of sample is determined by summary signal, using the way of demodulation.

28. Method, as set forth in claim 1, differing by, that reading of force curve control is carried out more than one time in predetermined points of sample's surface under control, upon different electric potential of probe relatively sample's surface, determining magnitude of electric interaction force of probe and sample and/or surface layers of sample, using difference of received values of cantilever's deviation force.

29. Method, as set forth in claim 1, differing by, that reading of force curve control is carried out more than one time in predetermined points of sample's surface under control, upon different electric potential of probe relatively sample's surface, determining magnitude of gradient of electric interaction force of probe and surface and/or surface layers of sample, using difference of received values of derivatives of cantilever's deviation force, according to coordinate of fixed end.

30. Method, as set forth in claim 1, differing by, that registration of magnitude of tunnel current between conducting probe and sample's surface is carried out together with reading of force curve or of its portion, using received set of

values for construction of distribution of electric conduction of surface and/or surface layers of sample.